REMARKS

In the Office Action of August 16, 2005, claims 1, 2, 5, 9, 11-15, 17, 18 and 19 were again rejected under 35 U.S.C. 102 (b) as anticipated by Rosenberg, U.S. Pat. No. 3,411,027. For a claim to be anticipated by a reference, each and every limitation in the claim must be found, either expressly or inherently, in a single prior art reference. *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

The Office action said in paragraph 13 that Applicant's remarks concerning Figs. 1 and 2 did not apply to Figs. 3 and 4 and Figs. 5 and 6. The Rosenberg specification states that the embodiment of Figs. 3 and 4 functions in substantially the same manner as that shown in Figs. 1 and 2. (col. 5, lines 20-22).

Nevertheless, Applicant makes the following specific comments concerning Figs. 3, 4, 5 and 6 and has made a short amendment to claims 1 and 13 to emphasize a difference from which flows the different operation of the present invention.

A patentable difference between the invention of claims 1 and 13 and the Rosenberg machine is the prevention of flux leakage in the rotor as flux is conducted to the primary air gap. In the flux enhancement mode, the PM material in the claimed invention acts as a flux guide for guiding the flux produced by the brushless excitation coil through the north-polarity rotor poles. This flux will then cross the radial air gap to the stator and return to the S poles in the rotor. A complete magnetic flux loop path is formed in which the permanent magnets are arranged as guides to continuously prevent the flux diffusion (leakage).

In Fig. 3 and 4 of Rosenberg, seen below, flux is shown as traveling through the PM material from poles 26 to poles 25. This is contrary to the teaching of the present invention in the flux enhancement mode.

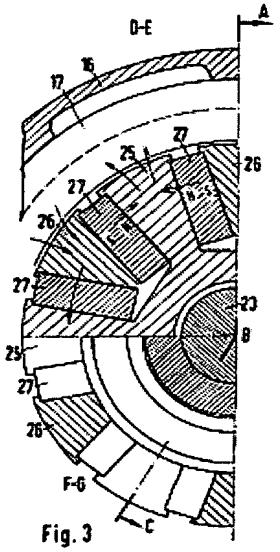


Fig. 3

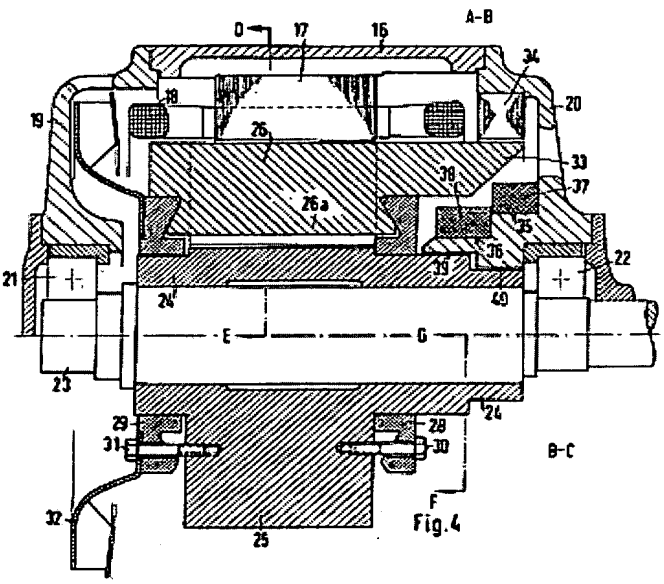


Fig. 4

In addition, in Fig. 4, please notice the split secondary air gap. Poles 25 communicate flux across air gaps 39, 40, while poles 26 communicate flux through flux extensions 33 and flux rings 34. The area below poles 26 is an unnumbered air gap providing for flux leakage. In addition, please note the PM material 27 does not extend outwardly with the pole extensions 33, 24 from the respective N and S poles. Its length is limited to the width of the stator core 26.

Consequently, the flux leakage in Rosenberg machines during field enhancement would be extreme. In Rosenberg's teaching, the permanent magnets are used only for defining the magnetic poles and are located approximately along radii from the axis of rotation. This allows leakage out the bottom of the poles between the PMs and other places mentioned above.

In Figs. 5 and 6 in Rosenberg, a different technique is used. In these Figures there is an enlarged cross section 53 of the shaft of non-magnetic material underneath the poles. Again there are long pole extensions 50 which are not protected against flux leakage and do not include PM material.

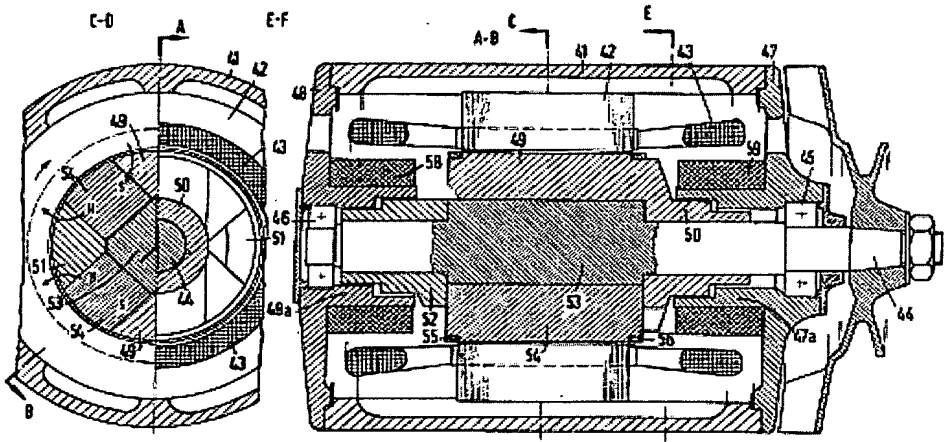


Fig.5 Fig.6

Applicant has amended claims 1 and 13 to emphasize that the PM material is also disposed between rotor pole portions of one polarity and a core portion of the rotor for containing the component of flux in the rotor pole portions as the component of flux is conveyed to the radial air gap and for inhibiting the component of flux from leaking from said pole portions prior to reaching the radial air gap. This is illustrated in Figs. 5 and 5a of the present application. Support in the written description is provided by paras. 0031 and 0034.

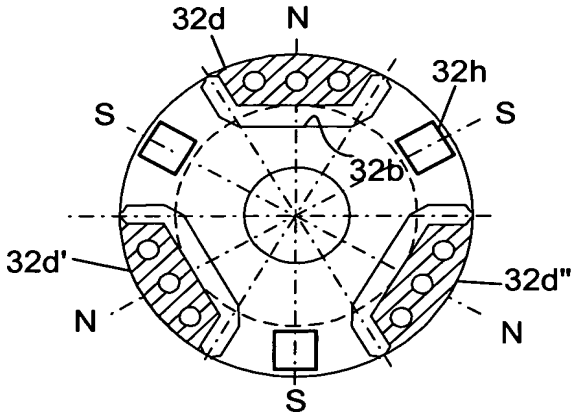


Fig. 5

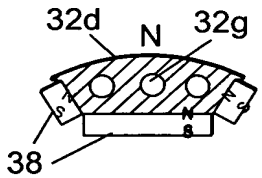


Fig. 5a

It can be seen that PM material 38 in longitudinal groove 32b will prevent flux from leaking to a rotor core portion 32a (Figs. 2, 3) which are part of the S poles.

In Rosenberg, Figs. 3 and 4, there is no PM material in this area to prevent leakage. In Rosenberg, Figs. 5 and 6, an enlarged non-magnetic portion 53 of the shaft 44 is used to separate the poles in this area instead of PM material. This is a very different approach in Rosenberg and it cannot be extended beyond the core of the stator in Rosenberg.

None of the other art has a comparable teaching to Rosenberg that would suggest combination with Rosenberg to provide the teaching of the present claimed invention.

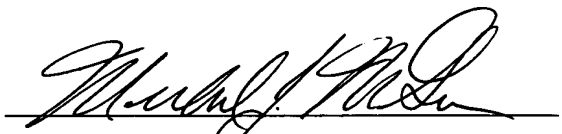
In addition, the features of claims 7 and 8, previously indicated as allowable, have been re-organized. Claim 7 now emphasizes a construction to extend the flux guide at the end of the body of the rotor. As a result, the pole extensions for both types of poles, N and S, communicate with one secondary air gap. The details of the connecting members have been placed in claim 8.

Claims 6, 20 and 21 have been amended to correct a lack of antecedents for certain terms in these claims.

CONCLUSION

In view of the amendment and remarks, reconsideration of the application is respectfully requested. Claims 1-21 remain pending and a Notice of Allowance for these claims is earnestly solicited.

Respectfully submitted,

By: 

Michael J. McGovern
Quarles & Brady LLP
411 East Wisconsin Avenue
Milwaukee, WI 53202-4497
(414) 277-5000
Attorney of Record